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ON LOCALIZATION OF FUNCTIONS IN THE BRAIN.[1]

BY C. E. BROWN-SÉQUARD, M. D.

THE subject upon which I shall have the pleasure of speaking to you to-night is that of the localization of functions in the brain. The general principle that parts exist in this organ which serve for definite functions is now pretty generally admitted, and the question remaining to be discussed is therefore whether or not such parts have as yet been found. As is well known, it is to two German physiologists, Fritsch and Hitzig, that is due the discovery of facts which have led to the reopening of this question. Hitzig and several other observers have published pathological facts which are in harmony with the apparent results of physiological experimentation. This attempt to establish on these two classes of facts a theory according to which certain parts of the fronto-parietal convolutions of the brain are the centres for the voluntary movements of definite groups of muscles has been warmly supported by many distinguished observers, and among them my eminent friend, Professor J. Charcot, of Paris. Before I try to show that this theory ought to be rejected, and that the facts on which it is grounded ought to be explained in a different way, it may be well to say a few words about another theory of localization which has been germinating in my mind for twenty years, although it has assumed a definite shape only within the last two years. The facts upon which this theory is founded are the following: you will all remember that I have often taught in this room and elsewhere that the character of the symptoms in brain-diseases is not in the least dependent upon the seat of the lesion, so that a lesion of the same part may produce a great variety of symptoms, while on the other hand the same symptoms may be due to the most various causes, various not only as regards the kind, but also the seat of the organic alteration. In view of these facts, I have been led to believe that lesions of the brain produce symptoms not by destroying the function of the part where they exist, but by exerting over distant parts either an inhibitory or an exciting influence, or, in other words, either by stopping an activity or by setting it in play. This implies the existence of localized functions, but it does not in the least imply that the localization is such as is supposed to exist by Hitzig, Meynert, and others. If we suppose that each of these functional centres is located, not, as these physiologists admit, in a cluster of cells all collected into a certain space or a limited and well-defined part of the brain, but in cells very widely diffused through that organ, we can easily explain all the facts that are furnished by experimentation on animals and by clinical observation. With this theory we can easily understand why considerable lesions in the two sides of the brain may not be followed by the loss of any function, while it is impossible to reconcile such a fact with the former theories of localization.

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[1] A lecture delivered in the rooms of the Boston Society of Natural History, June 1, 1875.

If we further admit the view I have held for years that one half of the brain can perform all the functions of the two halves, we can easily understand that in cases of a lesion confined to one half of that organ, if it extends through the whole of that half, there may be a persistence of all the cerebral functions (as regards voluntary movement, sensibility, and intelligence).

According to the theory that cells endowed with one and the same function are scattered in the brain, it is very natural that the effect of even a most extensive lesion should be only to diminish the number of the cell-elements which have to perform the various functions of the brain, without entailing the loss of any special function.

There is, however, another point which needs to be explained; and that is, how it can be that disease in one part of the brain should destroy the function of distant parts. There is a large number of facts bearing upon this branch of the subject; we know now that disease in the hemispheres of the brain may be followed by alterations of nutrition in the pons Varolii, the medulla oblongata, the spinal cord, the nerves, the muscles, the skin, the joints, and even the lungs (œdema, emphysema, hæmorrhage, or disturbances of the circulation), and further that these alterations in circulation and nutrition may come on with great rapidity, and that they stand in no constant or definite relation, as regards either character or position, to the lesions in the brain by which they were produced. In view of such facts as these we can easily conceive that a disease of any part of the brain should bring alterations in circulation and nutrition in other parts of this organ itself, and thereby a loss of this or that function. Besides, as we know that an irritation, however able sometimes to produce changes in distant parts, may in other cases fail to produce them, we can easily understand that a lesion in one part of the brain will sometimes produce symptoms and fail to produce them in other cases.

Let us now leave this part of the subject, and pass to the well-known experiments of Fritsch and Hitzig, the results of which, although not absolutely constant, as I have found, are yet sufficiently so to claim our close attention. Admitting, which is not quite proved, that the current acts locally and not by propagation to other parts, as ably maintained by my ingenious friend and pupil, Dr. Dupuy, it is not yet definitely settled whether the muscular movements produced in these experiments are due to the irritation of the gray matter, or of the nerve fibres, of the cortex cerebri. My friend Professor Rouget, on anatomical and physiological grounds, inclines to the latter view. Whatever may be the truth about that special point, there are several decided obstacles to admitting the conclusions which have been drawn from these experiments; one of these is that the parts, through the galvanization of which these movements are caused, are the will-centres for such movements. In the first place, these supposed centres are not situated in homologous parts in different animals, cats and dogs for example, a fact which evidently is a fatal objection to the theory. In the second place, these centres do not differ in size in the same proportion with the muscular masses to which they correspond; one small muscle, for example, the orbicularis oculi, which in bulk is certainly not even the hundredth part of the mass of muscles of the anterior limb, has a centre (pointed out by Fritsch and Hitzig) which, according to my experiments, is five or six times (in the dog) as large as the centre for the muscles of the anterior limb, so that the centre for the orbicularis is, proportionally to the mass supposed to be moved by it, five or six hundred times as large as it should be. In the third place, according to Ferrier's researches we find that instead of one centre the orbicularis has three in dogs and cats, and that the sterno-cleido-mastoideus has from three to five centres, and that these various centres for one muscle are wide apart one from the other.

Besides, Vulpian has injected the chemically inert lycopodium powder into the cerebral circulation, with the effect of choking up the vessels of the cortex cerebri, whereby we should expect that the function of this organ would be destroyed; nevertheless, by galvanizing it, Vulpian succeeded in obtaining the muscular movements so often referred to almost as distinctly after as before the operation.

Hitzig has found that the destruction of these supposed centres causes a paralysis of the parts which are moved when galvanism is applied to those centres. This sometimes occurs, it is true; but sometimes it does not, and when it occurs it is not permanent. In one case, one of the best observers of our times, Professor Rouget, after producing paralysis of the anterior limb by destruction of the cortical centre of the opposite side of the brain, found that when the similar centre on the other side of the brain was destroyed, there was (instead of a paralysis of the anterior limb yet free) the cessation of the paralysis produced by the first lesion.

If paralysis in the case of the extirpation of a part of the brain depended, as Hitzig and other localizers suppose, on the loss of the centre for certain voluntary movements, it is clear that in Rouget's experiment the paralysis should not disappear as it did after the second operation, but that, on the contrary, a paralysis of the other anterior limb should have appeared. But if we admit that paralysis is due to an inhibitory influence exerted by the irritation of the parts surrounding the so-called "centre" first extirpated, we can easily understand that a similar irritation, coming from the other side of the brain, destroys the effect of the first. The irritation of the big toe, as I have shown, will produce an inhibitory influence on the nerve-cells of the spinal cord in certain cases of inflammation of that nervous centre, while the irritation of other parts of the foot will stop that inhibitory action and allow the inhibited nerve-cells to become active again. But, whatever be the true explanation of the fact observed by Rouget, it is most decisive in showing that the part of the brain extirpated is not, as supposed by Hitzig and others, the centre for certain movements of the anterior limb.

Another important fact is that if we take away not only the pretended psycho-motor centre of a limb, but besides that part a good deal of the surrounding substance of the same half of the brain, we frequently find that there is no paralysis appearing. If Hitzig's views were correct we should then have a more extensive paralysis than there is in his experiments, as not only several of the supposed psycho-motor centres are taken away, but also the intervening parts of the brain, which several writers have considered as being vicariously able to replace the missing centres. I know that it may be said that the other half of the brain then performs the motor function of the injured half. But what becomes of this explanation *in extremis*, when we find that the simultaneous ablation of the pretended psycho-motor centres on the two sides is not followed by paralysis? The celebrated experiment of Flourens, consisting in slicing away the two halves of the brain from their anterior parts towards the pons Varolii, has long ago shown that a great deal of the substance of the cerebral lobes can be taken away without the appearance of paralysis.

Charcot, J. H. Jackson, and others, in support of the theory I am now criticising, have brought forward a number of pathological facts. My former assistant, a distinguished pupil of Charcot, Dr. R. Lépine, in a thesis on Localization in Diseases of the Brain, has given a drawing of a brain on which five black spots show the places of disease in as many cases, in most of which convulsions occurred chiefly or only in the arm on the opposite side. These five places are considered as corresponding to the supposed psycho-motor centres of the thoracic or abdominal limbs discovered by Fritsch and Hitzig. I wonder at this conclusion; for, if we were to admit that convulsions in those cases depended on the irritation of such centres, they would in the brain of man occupy a proportionally very much larger part of the convolutions than in dogs, cats, and monkeys. Besides, in most of these cases there was disease in other parts of the brain.

But if these facts were in the most perfect harmony with all the requirements of the theory, they would only show that *sometimes* a lesion in certain convolutions of the brain can produce convulsions either in the arm or in the leg on the opposite side. If we study a very much larger number of cases than those mentioned by Lépine, we find that on the one hand the pretended psycho-centres for the arm or for the leg are often diseased without the production of convulsions, and on the other hand that many other parts of the brain can, when injured or diseased, produce convulsions either in one arm or in one leg.

Cases published by my ingenious friend and former assistant, Dr. J. Hughlings Jackson, have led him to believe that when convulsions take place in cases of disease of the cerebral convolutions, they appear in the opposite side to that of the disease, a fact which seems to him to show that these convolutions contain motor centres for the limbs on the opposite side. If we extend our investigation to a large number of cases of injury or disease of the brain producing unilateral convulsions, we find that they occur more frequently in the limbs on the side where the lesion is in the brain than in the limbs on the opposite side. Thus, of twenty-two cases of hæmorrhage in the brain having produced convulsions in only one or in two limbs, there were seventeen in which the convulsions were on the side of the lesion, and five only in which they were on the opposite side. This predominance of convulsions on the side of the brain lesion is a decided proof that these convulsions do not depend on a mechanism similar to that of the movements produced in the limbs on one side in the experiments of Fritsch and Hitzig, as in these vivisections the movements take place in the limbs on the opposite side to that where the brain is galvanized.

The following facts are certainly not in harmony with the view that the convolutions of the brain contain motor centres. Neither are they in harmony with the view that the pretended motor centres are in the anterior and middle lobes and not in the posterior. Taking the cases of cerebral hæmorrhage collected by Gintrac, I find that there were convulsions in forty-seven out of two hundred and twenty-two cases of hæmorrhage in the various parts of the brain proper, not including the corpora striata, the optic thalami, the ventricles, or the central parts. These forty-seven cases of convulsions were distributed as follows: —

In	45	cases of hæmorrhage in the convolutions,	11 cases.
“	17	“ “ “ “ “ anterior lobes,	2 “
“	127	“ “ “ “ “ middle “	25 “
“	33	“ “ “ “ “ posterior “	9 “
	222		47

The kind of lesion has much more to do with the appearance of convulsions than the seat of the lesion. The anterior lobes, for instance, give rise to convulsions very frequently in cases of tumor, inflammation, etc., while, as I have already shown, they produce convulsions more rarely than any other part of the brain in cases of hæmorrhage (in two only out of seventeen cases of hæmorrhage).

I will only mention a few other strong arguments against the view that convulsions in brain-disease depend on an irritation of supposed psycho-motor centres. We find that convulsions may be produced by disease in any part of the brain, and that they may not appear, whatever part be diseased and whatever kind of disease exists. We find also that convulsions will vary extremely in their intensity, frequency, extent, etc., while the seat and kind of the disease is the same, and that, on the contrary, with a great variety as regards seat and kind of disease, there may be convulsions in the same limited part of the body. If we turn to animals we find, in some of them at least, certain parts the irritation of which gives rise at once to epileptic attacks; but these parts lie in the spinal cord and not in the brain, and the convulsions may take place when the entire brain and pons, and even the medulla oblongata, have been removed.

As time presses, I will content myself, before concluding, with mentioning some very curious experiments I have made recently. Till now I have not been in a position to repeat them as often as I wished, but have performed them already on five guinea-pigs, on one dog, and on one rabbit. They were undertaken with the view of ascertaining whether the application of the actual cautery, at a white heat, to the brain, would produce the crossed movements observed when we galvanize certain parts of the surface of that organ. My son assisted me, and watched the animal while I applied the cautery. In no case was any movement observed under these circumstances, showing that the action of the actual cautery is different in that respect from that of galvanism. But the particularly interesting part of the experiment was that as I continued to observe the animals, during a number of days after the operation, I found, to my great surprise, that they showed some signs of paralysis on the side of the cerebral injury. A paralysis on the side of the brain-lesion in the human subject occurs much less rarely than most medical men believe; thus I have collected more than one hundred and fifty cases in which it has happened. I cannot enter into all the theories that have been offered in explanation of its occurrence. With regard to that based upon supposed anomalies in the decussation of the pyramids, I would say that an absence of decussation has never been observed, and that, indeed, the pyramids do not seem to be the channels, at least the only channels, between the will and the muscles, as in a case of Vulpian they were well nigh destroyed without paralysis resulting.

Another supposition has been made, which probably is true for some cases. Ambrosi, Scholz, and others have looked upon paralysis as being caused by a pressure producing some œdema and anæmia in the other side of the brain, and not by the organic disease we find after death in the side of the brain corresponding with the side of the paralysis. This certainly is not true for a vast number of cases, in which there was no pressure at all.

The paralysis which has been found in my experiments, above alluded to, following cauterization of the cortex cerebri on the same side, is not, to be sure, very marked, but sufficiently so to be evident to careful observers. It exists in one or both limbs, and sometimes in the belly and the face. It is accompanied by a slight degree of contracture, especially in the front limb. Besides, there is also, on the same side, a paralysis of some branches of the cervical sympathetic nerve, as we find that the eyelids are partly closed and generally the pupil is contracted, — two phenomena which we observe after the division of that nerve.

It is clear that if a paralysis can appear on the side of an injury to, or a disease of the brain, we are not to look upon it as an effect of a loss of function of a supposed motor centre.

To conclude, I will say that if we survey all the facts brought forward to support the supposition that there are distinct psycho-motor centres in the brain, belonging to each set of muscles performing a distinct kind of movement, we find that it is impossible to admit that these centres occupy a separate, well-defined, and limited territory in some of the convolutions of the anterior and middle lobes of that organ; and we find also that the supposition brought forward in the beginning of this lecture, — that the nerve-cells endowed with each of the primary functions of the brain are disseminated through that organ, so that no local lesion or irritation can reach more than a part of those endowed with the same function or the same kind of activity, — we find, I repeat, that this supposition is supported by most of the known facts and out of harmony with none. Regretting not to have time to dwell more at length on this subject, I thank you for the profound attention with which you have listened to this rather hurried argumentation.

[Dr. Brown-Séquard then demonstrated the changes referred to, especially as regards the eyelids and pupil, upon two rabbits which had recently been operated on in Dr. Bowditch's laboratory at the Harvard Medical College.]

FIBROID TUMOR OF THE UTERUS.

BY CHARLES N. MILLER, M. D., OF BOSTON.

M. V. C., forty-four years old, a mulatto, though with considerable Indian blood (the latter perhaps contributing the stoicism which the patient manifested throughout her tedious and painful illness), had been married twenty-two years, and was of naturally robust constitution. She had menstruated regularly since fifteen years of age, and had never been pregnant. About eight years ago she first noticed an enlargement of the lower portion of the abdomen, accompanied with pain, heat, and soreness about the left iliac region. During this time her menses were regular but profuse, occurring at intervals of three weeks. Within a year she had taken her bed and had been most of the time confined to it by prostration and exhaustion resulting from almost constant hæmorrhage. She had consulted several physicians, who after examination gave various opinions in regard to her case, the last consultant having treated her for ovarian dropsy, giving no hope of relief.

I was called to see her on the 22d of July, 1874, and found her in an alarming condition, from loss of blood, and suffering from great pain in the abdomen; the latter was increased at intervals by the expulsion from the vagina of a solid substance of the consistency of liver and having an offensive odor. The size of the abdomen was nearly that of a woman at full term. It was plain that the patient was slowly sinking, and that unless some measure was adopted death must soon follow. Dr. Beach saw her in consultation with me the same afternoon, and upon examination of the vagina and rectum found a large, nearly solid tumor of somewhat irregular shape, involving the left half of the uterus from just above the os to the fundus, and compressing the rectum and bladder. The abdomen was quite tender and the pulse very weak. Any operative interference was out of the question on account of her low condition. The treatment agreed upon was to keep the uterus firmly contracted by ergot, with the view of cutting off the supply of blood to the growth, checking the hæmorrhage, promoting the expulsion of clots and sloughs, and assisting the process nature had already commenced; meantime supporting the patient's strength by concentrated extract of beef, muriated tincture of iron, and stimuli. This course was strictly followed for over three months, commencing with fifteen drops of the fluid extract of ergot alternating with the same quantity of the muriated tincture of iron, every three hours, when awake.

The patient bore the ergot remarkably well, and it had the immediate effect of controlling the excessive hæmorrhage and of diminishing the amount of serous fluid which had always accompanied the passage of portions of the sloughing tumor. Six weeks after the treatment had been commenced, the patient began to change for the worse. The pain in the region of the tumor became almost intolerable, and was controlled only by Battley's sedative and subcutaneous injections of morphia. Frequent fainting spells began to supervene, and it seemed as if the patient must gradually succumb to the combined effects of the enormous drain upon her system and the presence in the uterus of a large mass of suppurating material, which by this time began to make its existence unmistakably known, portions of broken down tissue as big as a tea plate and of an extremely offensive odor passing frequently, and always attended with excruciating pains resembling those of labor; the stench required vaginal injections of carbolic acid and chlorinated soda in solution. The appetite began to fail, and there was great difficulty in swallowing.

The pulse ranged from 120 to 130, was weak and threadlike. The tongue was dry and heavily coated. The dose of iron was increased and quinine was added to it in five grain doses.

On the 14th of November, after having passed a very miserable day, she was awakened about three in the morning by a severe paroxysm of pain. This was immediately followed by a discharge from the vagina of a large fibrous mass, accompanied by a torrent of clear fluid which drenched the bed-clothing and ran down upon the carpet in streams. The mass weighed over three pounds, had a number of root-like appendages, and on one side presented a raw and bloody surface. The tumor was much firmer in texture than anything the patient had previously passed, and gave forth a most sickening and disgusting odor. No hæmorrhage followed.

From that time the patient began to improve, and at present is performing her ordinary household duties. She has had a return of her catamenia twice within two months, the discharge being normal in appearance and quantity. The uterus, on examination by Dr. Beach and myself within a month was found contracted to its normal size.

The interest in this case seems to centre in the fact of the tolerance of the system to the long-continued use of ergot; the exhibition of the drug no doubt keeping the uterus sufficiently contracted to enable it at the proper moment to throw off a large mass of slough, at the same time controlling the hæmorrhage and preventing the absorption of elements that might induce septicæmia. Of the preparations of iron, the muriated tincture was selected from its well-known styptic and tonic properties to assist in the prevention of hæmorrhage and to improve the character of the blood, which had become impoverished from a long-continued drain. The patient has stated within a week that she is as strong as she ever was, and has taken a walk of between four and five miles without ill effects.

RECENT PROGRESS IN PATHOLOGY OF THE NERVOUS SYSTEM.

BY JAMES J. PUTNAM, M. D.

Cerebral Concussion. — In the last report,[1] certain reasons were given for believing that in so-called cerebral concussion a vascular paralysis occurs inside the cranium, the blood collecting in the larger veins and sinuses, as it does in those of the abdomen in cases of shock, leaving the brain-substance essentially in a condition of anæmia; and that it is to this that the symptoms are due. More recently some experiments have been reported by Koch and Filehne[2] in which this condition of concussion was produced experimentally in animals by rapping the head with a light hammer, care being taken to entirely avoid causing hæmorrhages. Under these circumstances they found reason to think that not alone the vaso-motor, but all the other cerebral centres as well, suffered mechanical injury.

Post-Paralytic Chorea.[3] — It has long been known that chorea in children is often associated with, or followed by, a more or less well marked hemiplegia, and Hughlings Jackson has used the fact as an argument in favor of his view that, as a rule, the usual form of chorea is dependent upon a lesion (minute emboli) in the anterior part of the hemisphere of the brain. According to Dr. Mitchell, it happens also that a one-sided awkwardness of movement, even so marked as to suggest incipient chorea, "is sometimes the precursor in children of a hemispasm." The reverse sequence, the choreal disorders following on hemiplegia, has hitherto not been distinctly acknowledged as something of frequent occurrence, although, their attention being once called to the point, many physicians can no doubt recall cases like those described by Mitchell. He claims "that on adults who have had hemiplegia and have entirely recovered power, there is often to be found a choreal disorder, sometimes of the leg and arm, usually of the hand alone; that it may exist in all degrees, with partial loss of power, and with full normal strength; that it may consist in mere awkwardness, or exist to the degree of causing *involuntary* choreoid motions of the part;" further, "that the younger the person when paralyzed, the more probable is the occurrence of choreal developments, so that in many cases of infantile deformity the choreal troubles remain as the chief difficulty long after there has been a restoration to full muscular power;" and moreover, that there is "reason to believe that some of the general and prolonged choreoid disturbances which we see now and then from birth are due to, or rather are in some fashion related to, intra-uterine palsies which have either wholly or in part passed away."

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[1] Boston Medical and Surgical Journal, xci. 114, July 30, 1874.

[2] Archiv für klinische Chirurgie, 1874, xvii.

[3] S. Weir Mitchell, M. D., American Journal of the Medical Sciences, October, 1874.

It is plain that these facts, if they are such, lend further support to the theory proposed by Hughlings Jackson, mainly on theoretical grounds, that the involuntary, localized, movements of chorea and the unilateral convulsions associated with it are produced by the irritation of the central portion of nerve-tracts corresponding with definite groups of muscles, and are analogous to the contractions and convulsions occurring in the well-known experiments of Fritsch and Hitzig. As Mitchell says, the above propositions, if true, indicate "that choreoid affections may be owing to gross organic lesions, and that, under certain favoring circumstances, the same lesion which occasions a palsy may in itself, or in the disturbances it causes, also bring about chorea."

It is also interesting to remark in this connection, as further evidence of their cerebral origin, that the choreal movements observed in these cases were sometimes of a truly coördinated order, and thus again, analogous to the movements in some of the experiments of Hitzig and others. Thus one patient used to "rub continually the right leg with the right hand, so as even to wear out the pantaloons." In another case the arm was alternately flexed and supinated, and in another it would swing across the body, but only while the patient walked, the fingers being firmly flexed at each step. Hughlings Jackson has reported recently the case of an epileptic who went regularly through the motions of twirling his mustache, in complete unconsciousness.

As regards their clinical history, these cases of post-paralytic chorea are very obstinate, but improvement is not out of the question, especially under persistent and careful gymnastic training of the muscles affected, by a competent teacher.

It is now several years since Dr. W. A. Hammond first described a disease, called by him athetosis, which though not identical with chorea is certainly analogous to it, consisting in perpetual, slow, powerful, totally uncoördinated movements of the fingers and toes, their muscles becoming hard and large under the constant exercise, and this also there is some reason to regard as an affection of cerebral origin; at least in both the cases given in the author's Diseases of the Nervous System, there was other evidence of cerebral disease, epilepsy in one, aphasia in the other, associated in both with failure of the memory and intelligence.

Circulation in the Encephalon.[1] — We would simply refer by title to this work, which does not admit of a brief summing up, on account of its great practical value. It consists of a description of the exact distribution of the cerebral vessels, and promises, in the light of a more advanced knowledge of the functions of the different parts of the brain itself, to aid us greatly in the exact localization of embolic inflammations, and help to further physiological results.

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[1] Par H. Duret, Archives de Physiologie, vi., 1874.

Localized Inflammation of the Anterior Cornua of the Spinal Cord.— No doubt can now be entertained of the propriety of recognizing the occurrence among adults of a disease closely resembling, in its pathology and clinical history, the so-called essential or spinal paralysis of children, although in certain details the two are different. The following group of symptoms is given by Seguin[1] as characteristic.

"Dysæsthesia and slight temporary anæsthesia, paresis and akinesis, both these symptoms affecting the extremities, and in rare cases the face, eyes, tongue, and throat; not affecting the respiratory muscles nor those of the back and abdomen, nor the bladder, nor the sphincter ani. Muscular atrophy in the paralyzed parts. Loss of electro-muscular contractility (to faradic current) in the atrophied muscles. A strong tendency to spontaneous retrocession of the palsy and to spontaneous cure.

"The important negative characters of this affection are: Absence of palsy of bladder, or of sphincter ani, or of respiratory muscles. No bed-sores. No great and extensive anæsthesia. No spinal epilepsy" (all signs of acute diffused myelitis).

The pathology of the disease is essentially "granular degeneration of the ganglion-cells of the anterior horns." The treatment resembles that of infantile paralysis.

A case of muscular wasting from localized inflammation of the anterior cornua, though perhaps not belonging fairly to the class of diseases just discussed, is reported by Prevost and David,[2] where the sole symptom was atrophy of the muscles of the thenar eminence on the right hand, and the nervous lesion atrophy of the eighth spinal nerves on the right side, atrophy and sclerosis of the right anterior cornu, involving the large, motor nerve-cells of the lateral group alone, through a space of about one inch in length, the maximum of disease lying opposite the eighth nerve. The patient was sixty years old and had died from some surgical injury, the muscular atrophy having existed, apparently unchanged, since his childhood.

Two remarkable cases, one of elevation, the other of depression, of the general bodily temperature in connection with spinal injury have been reported in England. The first,[3] observed by Mr. Teale, of Scarborough, apparently under every precaution, was that of a young lady who was thrown from her horse while hunting, sustaining a fracture of two ribs and an injury of some sort to the spine at the level of the sixth dorsal vertebra. During the attack of meningitis which followed, the temperature, measured both in axilla and in the rectum, rose repeatedly to 122° Fahrenheit, and perhaps higher, no thermometer being at hand which would record above that point. During nearly two months it remained above 110° Fahrenheit. The case ended in recovery.

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[1] For excellent summaries of our knowledge on this subject, with original cases, see Considérations sur l'atrophie aigue des cellules motrices, par Petitfils, Paris, 1873; Spinal Paralysis, by E. C. Seguin, Transactions of the New York Academy of Medicine, 1874. See also this journal for March 25, 1875, a paper by Dr. D. F. Lincoln, of Boston, and Bernhardt, Archiv für Phsychiatrie und Nervenkrankheiten, iv. 2.

[2] Archives de Physiologie, vi. 595, 1874.

[3] Lancet of March 6, 1875. See also this journal for April 8, 1875.

The other case[3] was that of a man who fell from a considerable height, dislocating the first dorsal vertebra, and causing a red softening of the cord at that level, with complete paraplegia. When first admitted into the hospital he had a temperature of 95.2° Fahrenheit, and from then until his death, which took place on the eleventh day, it continued to sink gradually, reaching 80.8° Fahrenheit, its lowest point.

Phosphorus in Nervous Affections. — It is well known that Thompson,[2] as well as Broadbent[3] and others, have been praising highly the efficacy of phosphorus in neuralgia, and a number of other diseases, mainly of the nervous system. Although the number of their cases is not yet great enough, and their observations have not yet been sufficiently controlled, to justify us in definitely accepting their conclusions, yet those who wish to test them will do well to observe certain precautions, recommended especially by Thompson, as the incautious use of the drug is attended with great danger. Phosphorus has generally been administered either in pillular form, where it exists either dissolved in suet, wax, resin, bisulphide of carbon, or a menstruum similar to these, or as reduced phosphorus, or in the shape of phosphide of zinc; or else in solution in alcohol, ether, or one of the vegetable or animal oils.

According to Thompson, the solutions in the vegetable (almond and olive) oils should be strictly avoided, since annoying and serious results have occasionally followed their use in the hands of several observers, probably because a portion of the phosphorus is converted (by the limited quantity of oxygen dissolved in the oil) into hypophosphorous acid, which is irritating to the stomach and very poisonous when absorbed. Theoretically this change would not take place if the oil had been superheated, and the contained air driven off; careful clinical experiments upon this point have, however, it is said, not yet been made. The author thinks it is the result of the use of this preparation that have served largely to give phosphorus its bad reputation among the profession.

The pills containing phosphorus dissolved in bisulphide of carbon are also objectionable on account of the poisonous character of the menstruum as well as because there is reason to think that the latter tends to counteract the effect of free phosphorus. The pills made with wax and resin are objectionable on theoretical grounds on account of their

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[1] British Medical Journal, February 8, 1873.

[2] Free Phosphorus in Medicine, J. Ashburton Thompson, London, 1874. See also a review of the work in this journal for January 21, 1875.

[3] Practitioner for April, 1873, and January, 1875.

insolubility, but the latter, so far as they have been tried, have proved sufficiently efficacious.

Pills of undissolved free phosphorus are dangerous unless special precautions be taken, in their manufacture, to subdivide the element thoroughly, and at the same time to prevent it from becoming coated, by oxidation, with the inert phosphoric acid, and this is not usually done. Even then each pill should be carefully protected, and given on a full stomach, in order that the oil in the food may help dissolve the drug, which otherwise is in danger either of being partially converted into hypophosphorous acid, or of remaining undissolved, to be absorbed suddenly at some future time in accumulated amounts, when a quantity of oily food happens to come into contact with it.

The pills made with suet are theoretically unobjectionable, but have not practically proved so good as some other preparations, of which the best are the solutions in cod-liver oil,[1] alcohol, or ether, and the pills of phosphide of zinc. Of these the second can be made the most palatable,[2] but the former is to be preferred. Phosphide of zinc, in sugar-coated pills, is a good preparation, especially for children, but as it decomposes only with the aid of a weak acid each dose should be followed by a draught of an acidulated tonic or of lemonade, lest the drug should accumulate in the intestine.

℞	Phosphorus	gr. j.
	Cod-liver oil	℥ iss.
	Oil of peppermint	♏ j.
℞	Tincture of phosphorus (a saturated solution in absolute alcohol dissolved with heat and agitation).	ʒ iij. ♏ x.
	Glycerine to	℥ iss.
	Spirits of peppermint	♏ v.

A full dose of phosphorus for short periods is one twelfth of a grain of the solution in alcohol or cod-liver oil every four hours, or one third of a grain of the phosphide of zinc every two hours; but for prolonged use one fiftieth of a grain of the former is enough. There is no absolute reason to believe that the effects of the drug are cumulative, but under the slight uncertainty it is well to make a pause every two or three weeks. It is said that with these precautions phosphorus may be given with perfect safety, but in view of some of the cases of poisoning that are reported, and of the fact that our knowledge of its chemical and physiological relations is confessedly a little insecure, the physician could hardly be too watchful while using it, especially since according to Thompson no antidote is known which will neutralize the effects of the drug after it has entered the circulation. "The slightest symptom of dyspepsia should lead to its instant intermission," and the patient should be examined for tenderness at the epigastrium or right hypochondrium, and for enlargement of the liver, as signs premonitory of danger.

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[1] Formula No. 6.

[2] Formula No. 10.

Monobromide of Camphor. — The use of this drug, warmly recommended by Bourneville [1] as a hypnotic and sedative, on the ground of physiological and therapeutic experiments, is not favored by Lawson,[2] who on fair trial found it less efficient than some other drugs of the same kind, and difficult to take in efficient doses without causing gastric irritation.

WILKS'S AND MOXON'S PATHOLOGICAL ANATOMY.[3]

In 1859, Dr. Wilks published his lectures delivered to the students at Guy's Hospital during the two preceding years. The scope of the book may in part be inferred from the preface, wherein it is learned that the original plan was that of a sort of syllabus, accompanied by references to specimens in the hospital museum. Further explanation seeming necessary, the lectures were published as delivered. Such was the first edition, one of unquestioned originality, the work of a sagacious observer, and representing an epoch in the progress of the study of its subject in England. Though nominally a series of lectures, it furnished a fund of material, both of fact and of suggestion, which made it of very general value. Not to be considered as a text-book, it might rather be regarded as a sort of supplementary catalogue of the museum, calling attention to the variety of specimens there contained, many of which have owed their preservation to some of the most eminent of England's medical worthies.

The student of pathological anatomy in 1875 in some respects almost literally hears a different language from that used in 1857; the demonstration of specimens takes place in a different way; points upon which stress was then laid are now overlooked, or are treated with relative indifference. Experimental pathology and its results, still more its possibilities, have opened a field which seems to have no limit, yet one which must be entered by a broad though well-defined way.

We should therefore object to the desirability of retaining in the second the general aim and character of the first edition.

If originality is preserved, it appears in such a form as to be less impressive. We think the student of the book cares less for the ideas of the writer than for his statement, critical if need be, of those of others. Above all he wishes to be taught how and what to observe, and requires in addition a manual, to which he may refer when in doubt, or when desirous of further information.

If he may thus become a worthy seeker, the merits of originality will be more thoroughly appreciated hereafter.

In looking over the section on bone, we are somewhat surprised to find that Dr. Moxon regards a node as a circumscribed formation of lymph beneath the periosteum. Caries sicca, again, is spoken of as a peculiar form of syphilitic bone disease.

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[1] Practitioner, August, 1874.

[2] Ibid., November, 1874; April, 1875.

[3] *Lectures on Pathological Anatomy.* By Samuel Wilks, M. D., and Walter Moxon, M. D. Second Edition. Philadelphia: Lindsay and Blakiston. 1875.

Though the waxy degeneration of muscular fibre is mentioned, England's part in its history is undervalued. The Germans, at all events, give Bowman the credit of the discovery. Though Dr. Moxon is unaware of the occurrence of tubercles in the heart's muscle, it might be stated that other observers have been more fortunate.

In treating of thrombosis and embolism, considerable stress is laid upon the formation of a thrombus in the apex of the heart and its immediate displacement as a cause of cerebral embolism, or of those forms occurring in the puerperal condition and at times productive of sudden death when the pulmonary artery is plugged. The auricular appendages are notoriously favorite seats for cardiac thrombi, in connection with arterial embolism, and the theory of immediate formation and removal requires more support than is given. Observations as to fatal embolism of the pulmonary artery show that it is generally due to primary thrombosis of a body vein, and usually of one of considerable size.

In referring to the presence of blood in the so-called cavity of the arachnoid, and its relation to chronic inflammation of the dura mater, Dr. Moxon's crucial observation might apply equally well to the theory he opposes as to the one he favors.

At the end of the special pathological anatomy, as it might be called, a considerable number of pages is devoted to "the association of morbid conditions," and to the changes occurring in certain conditions. It is here, under the term anæmia, that we find the passage which Dr. Wilks has recently called attention to as indicating a priority of observation in what has been spoken of by others as progressive pernicious anæmia. He says, and the changes from the text of the first edition are unimportant, "We occasionally meet with cases of fatal anæmia where no disease is found in the body; patients, after being in an almost bloodless condition for some months, die, and all the organs are found pale, and some in a commencing state of fatty degeneration; there is also generally some exudation of serum into the serous cavities, and œdema of lungs and other parts. We have now seen several of these cases; the blood resembled pink water, and formed no coagula in the vessels or heart. The latter organ exhibits in a marked degree that form of fatty degeneration where the internal surface, especially the left ventricle, presents the peculiar mottling from changes in the muscular fibre."

Though we cannot recommend this work as a suitable text-book for the medical student, Dr. Moxon is certainly entitled to the credit of having added very largely to the interest of an already readable book. So ingenious a writer, so ready and plausible a theorist, is rarely met with. One constantly regrets not having the opportunity to dispute this conclusion, to suggest doubt as to that premise, or to present controverting observations. Though much impressed with his skill, the element of plausibility is so striking that even when yielding we do not find ourselves convinced.

A notable paucity of allusions to recent monographs makes the book of diminished value to those seeking a work of reference. R. H. F.

SEX IN INDUSTRY.

THE past few years have witnessed the publication of several works whose place in literature it is difficult to define with exactness. They are not distinctively medical, although the physician finds within their covers the discussion of subjects usually considered to pertain alone to his professional study. They are not for the family fireside only, although they elaborate topics which intimately involve domestic welfare and perhaps personal livelihood also. They are not in strictness contributions to sanitary science, although the sanitarian may find within them much to stimulate his investigations. They may best be described as reformatory in character and aim, inasmuch as their purpose, either indirect or positive, is to stem the increasing secession of women from purely feminine works and ways, and, by demonstrating that males and females are anatomically and physiologically unlike in essential particulars, to show that the weaker sex, because of its weakness, cannot with safety attempt things in education and in labor which the stronger can bear with impunity. It thus happens that the physician, the sanitarian, the labor-reformer, the philanthropist, the teacher, as well as those who are themselves in question, the women who are held up to public view as having functions to attend to which unfit them for masculine effort, either mental or manual, discover in these books much that is instructive and suggestive, if not altogether convincing.

To this class of reformatory productions the book before us belongs.[1] The purpose of the author is to prove that the physical organization of women unfits them for any considerable exercise of their bodily and mental forces simultaneously, and that any employment wherein these forces are coördinated, if continued sufficiently long, will result in "the impairment and overthrow of the peculiar function of the sex," and in a long train of correlative and consecutive evils. To be married and to bear and nurse children is the normal use of women, and any departure from this toward avocations calling for the expenditure of "physico-mental" force is attended with risk and often with ruin. Especially is this true during the period when the sexual function is undergoing development and attaining maturity. In support and illustration of his thesis, the author adduces evidence from various occupations in which females are employed; the manufacture of textile-fabrics, type-setting, telegraphy, basket-making, money-counting, sewing-machine labor, are cited as affording facts which demonstrate the proposition that sustained "physico-mental" activity on the part of woman is a prolific source of the diseases peculiar to her sex.

To the discussion of his theme the author has brought zeal, directness, and comprehensive intelligence; but we feel constrained to say that, in our opinion, he has failed to substantiate his theory. He has, it is true, placed before his readers much testimony from physicians and from the women themselves. The objection affects, not the quantity, but the quality of the evidence. The reader does not come upon substantial and stubborn facts wherewith to shape his convictions; he does find opinions, however, many and pertinent. Miss

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[1] *Sex in Industry: A Plea for the Working-Girl.* By AZEL AMES, JR., M. D. Boston: James R. Osgood & Co. 1875.

A., for example, a "lady operator" in a telegraph office, has broken down, is never "regular," has headache, backache, "nervous debility," constipation, a train of evils which she attributes to her avocation as the cause; and Dr. Ames accepts her view as the correct one. It is obvious that such testimony is only measurably weighty, because the witness is unable, in the nature of things, to eliminate the apparent from the true sources of her ill-health. In seeking for the cause of her "weaknesses," she naturally turns first to her active toil, and loses sight of the irregular habits of living, the social excesses, the unsanitary surroundings, which are often in intimate relation with her pursuit for a livelihood, and ought not to be forgotten in any estimate of the probable etiology of the diseases of woman.

Moreover, it is apparent that the females engaged in the various industries cited by the author do not have the monopoly of the sexual diseases. If Dr. Ames or any equally diligent investigator should set about ascertaining the relation of sex to almost any avocation or to no avocation at all, — to passive *ennui* and idleness, — he would find plenty of young women with menorrhagia, amenorrhœa, dysmenorrhœa, leucorrhœa, displacements, *et id genus omne*, and very probably able also, in these days of superior intelligence, to call all these "things by their right names," as our author, in his preface, makes a virtue of doing. Even those women who fulfill their natural mission as wives, mothers, and wet-nurses could offer some valuable observations in this line, to the effect that the bearing and rearing of children was in their opinion not unaccompanied by the severest fatigue and manifold functional disturbances. Looking at the subject from a purely medical stand-point, we cannot rid ourselves of the impression that the book under notice has failed to make a strong case against physico-mental industries, as such.

But after all that the work puts forth, supposing it to be accepted as true, what will be the probable effect upon the tendency of women to enter the industrial pursuits cited? Is not the matter beyond the reach of scientific influence or legislative control? Will not single women very naturally seek employment in channels where they can easiest earn an honest livelihood? We do not share the forebodings of the author that the number of such employees is so great, or their physical decline is so tangible, that the vigor of the American race is imperiled thereby. We cannot help accepting the situation as it is, believing that most of human conditions sooner or later adjust themselves to natural laws, and that females, whether they adopt teaching or telegraphing for a living, will not be inclined to follow employments which they find to be suicidal. Indeed, we think it a matter of rejoicing that the avenues of industry for women are multiplying, and that thereby a fruitful source of female complaints — the want of occupation — is diminished. Before drawing the line too arbitrarily between hurtful and healthful employment, let us hear some negative testimony, the stories of women made happy and vigorous by having something to do.

Finally, we cannot help feeling that there is some objection to showing forth so publicly the peculiarities of the female sexual organization with all its deviations of function. The irregularities of menstruation are not a matter to be read about and talked about, like ordinary topics, in the drawing-room; and we believe that the open discussion of such subjects in popular treatises is of questionable moral utility. The cause of truth and humanity is not always best served by such plain-spoken directness, and something is due even to time-honored conventionalities which have drawn a veil of propriety over such matters.

MEDICAL EDUCATION IN AMERICA.

THE annual announcements of many of our medical schools, which appear usually at this time of the year, give one in some degree a means of measuring the standard of medical education in this country. We say in some measure, for the style of most of these productions is so glowing that to arrive at a just estimate of the educational advantages of the various schools requires a pretty careful study of these yearly announcements, and considerable experience of the methods employed to attract students. There is a certain theatrical coloring about these circulars, which is well calculated to mislead the unwary. We find, for instance, in one the statement that "the success of this department is without precedent;" another affirms the success of its alma mater to be "unparalleled," while a third indulges in congratulations to "the alumni and the friends of the college upon the flourishing state of its affairs." Turning down the foot-lights and letting in a little of the matter-of-fact light of day, let us endeavor to determine how much cause for congratulation we really have.

Undoubtedly there has been considerable improvement. The old-fashioned course of two sessions during the winter season, of scarcely more than four full months each, interlarded with mercantile, agricultural, and other pursuits, and preceded by a "full year's study with a respectable practitioner" (on paper), is pretty generally conceded to be a programme which will not "draw" nowadays. It has been found necessary to promise more than this, and various expedients have been resorted to. The winter course has been lengthened by giving a "preliminary course,"— of two weeks' duration,— which, it is claimed, "enables professors to consider exhaustively subjects of importance which cannot be so fully treated during the regular session;" or, instead of this, the course is inaugurated by a series of popular lectures. A more important addition is the so-called summer session which most schools have adopted, although we find in one case, after a great flourish of trumpets, that the course is to be of but six weeks' duration! The general plan of study during this term is supplementary to that of the winter term, and the instruction given is often the best of its kind; but it possesses a great disadvantage in not being part of the required course, and is consequently attended by a very small proportion of the students; moreover, it is not to be compared with a system which provides two full terms of carefully-arranged work to all students during the year.

This is about as far as most of our faculties have dared to go, notwithstanding the success attending the experiment made by one school of giving three full years of college instruction. The only attempt in this direction which has thus far been made is a graded course of three years offered to those students who desire to undertake it. We sincerely hope that there are enough sensible young men to see the advantage of this plan of study to make the adoption of it as the required course necessary. Until this has been done no school will have a right to say that it gives more than two years of instruction. In reality the majority of American students graduate after eighteen months of college work, preceded by a year of such study as the acquirements or time of the private instructor permits. What a fraud this first year's course of study really is, most of our college deans could undoubtedly tell us, were it desirable to do so, and yet we hear much talk about a full three years' course. Until a radical change has been adopted in the method of instruction it would be hardly worth while to bring up the question of a preliminary examination. This we are glad to see has been adopted by that school which has made the needed reforms, and by one other also.

We regret to be unable to give a better report of the progress made by our teachers in the cause of medical education. The old policy of endeavoring to attract students by making the course "popular" is still the prevailing one. The fallacy of this theory will, we think, before long be fully demonstrated. Nearly all our medical schools have plenty of talent and plenty of clinical material at their disposal, but neither of these can be put to its best use without proper organization. A course of study which carries the student progressively and systematically from one subject to another in a just and natural order, and which is followed by rigorous examinations, enforces a mental discipline which is of incalculable benefit to him, and insures a thorough training in certain branches of medical instruction which could not be acquired under any other system. This training is of especial importance in the early years of a student's life, and paves the way for the work he has before him in the hospital wards.

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LISTER IN GERMANY.

THE progress of Professor Lister through the university towns of Germany, which he is visiting chiefly with a view to inquire into the mode in which the antiseptic treatment is carried out on the Continent, has, according to the *Lancet*, assumed the character of a triumphal march. On his recent visit to Munich he met with a most enthusiastic reception. At a banquet given to him nearly all the professors of the medical faculty of the university, and many members of the government, town council, and medical society of Munich, took part. The guest was welcomed by Professor Nussbaum in the name of the minister, Von Pfeuffer, and Professors Ziemssen, Seitz, and others were amongst the speakers. The students of the university also sent a deputation to Professor Lister, to express the esteem and high appreciation they had for the originator of the antiseptic treatment, which is carried out with excellent results at the different hospitals in Munich. From Munich he went to Leipzig, where, as is well known, the principles of antiseptic surgery have been faithfully adopted by Professor Thiersch, who, however, maintains the superiority of salicylic acid over carbolic acid. On the 8th inst. there was a "Listèr-Banket" in the Schützenhause, at which some three or four hundred persons were present, including nearly all the professors, many of the medical practitioners of the town, and a large number of medical students. Thiersch proposed Professor Lister's health in a dryly humorous speech, which was couched in most complimentary terms and was loudly applauded. Professor Lister, in his reply (which was in German), took occasion to tell the Leipzigers that he had tried salicylic acid, and found it inferior to carbolic; although he would willingly have adopted it had it been better, for it was the *principle* of antiseptic surgery, and not this or that acid, that he contended for. Professor Volkmann, who had come from Halle with many of his colleagues and students, then proposed the health of Mrs. Lister and the Misses Lister, who were present in the gallery; Professor Carus gave the "University of Edinburgh," and toast after toast followed, the proceedings lasting beyond midnight. One very novel feature was the introduction of two songs written in honor of the guest of the evening, and set to well-known students' melodies. They were sung by the whole company, and they abound in words of welcome to Professor Lister, and praise of antiseptic surgery. One of them, entitled "Carbolsaüre Tingel-Tangel," is full of witty allusions to the germ theory, bacteria, and antiseptics, the special virtues of salicylic acid not being forgotten. The cordial reception of the professor in Germany is, we think, to be looked upon as a tribute of respect for his high standing and attainments, and his labors as a scientific surgeon, rather than an indorsement of his antiseptic theory.

MEDICAL NOTES.

— The fourth series of fifty cases of ovariotomy is reported by T. Keith, F. R. C. S., in the *British Medical Journal* of June 26, 1875. The mortality of the different series of his cases is given by Mr. Keith as follows: In the first series of fifty cases there were eleven deaths; in the second, eight deaths; in the third, eight deaths; and in the fourth, six deaths. In the six fatal cases of the fourth series the cause of death was septicæmia. "Further experience," says Mr. Keith, "has satisfied me of the value of the actual cautery in the treatment of the pedicle, and I am coming to the conclusion that it is the best of all the intra-peritoneal methods for securing the pedicle." Sulphuric ether was given in all the cases.

— A Case of Neuralgia Treated by Nerve-Stretching serves as the text for a clinical lecture by G. W. Callender, F. R. S., reported in the *Lancet* for June 26, 1875. A man aged twenty, by occupation a carpenter, had his right hand severely injured by a circular saw. Primary amputation at the wrist was followed by imperfect healing of the wound, by a painful condition of the fore-arm, and by slight necrosis. One year later he submitted to a second amputation; but although the wound healed he was liable to pain, and about seven weeks back he struck the end of the stump, since which time the pain had greatly increased. He thereupon decided to go from Canada to England for the purpose of obtaining relief. When admitted to St. Bartholomew's Hospital the fore-arm and arm were cold, and the skin was glazed and of a dusky color. The surface tissue was inelastic, and the skin was moved stiffly over the subjacent fascia. He complained of twitchings in the muscles of the stump, and to a less extent in those of the arm. He suffered from constant pain, sometimes described as burning, sometimes as shooting, but liable to become suddenly worse and almost unbearable, extending from the stump up to the elbow and arm. There was tenderness on pressure, with aggravation of other symptoms, chiefly from the first over the course of the median nerve; but latterly there had been pain on pressure over the tracks of other nerves, such as the ulnar and the external cutaneous. Cool lotions were ordered for the arm, subcutaneous injections of morphia into the fore-arm, and quinine and morphia were administered to the patient. March 10th there had been no improvement. On March 27th Mr. Callender cut down upon the median nerve, which seemed to be thickened in itself and in its surroundings, and after freeing about one inch of the nerve from adjacent structures he forcibly stretched it, pulling it down for about three quarters of an inch. The wound was then washed with a solution of salicylic acid, drained, and closed. For twenty-four hours after the operation there was pain in the course of the nerve, extending to the axilla; it then ceased and did not recur. April 25th the patient was well in all respects.

— A French journal, in commenting upon a case of accidental poisoning through the mistake of an American apothecary, says, "In France, our apothecary shops are inspected in the most careful manner and at stated intervals; poisonous drugs are kept locked in a case set apart for them. The public health does not suffer from this precaution. We are threatened already with 'liberty as it is in Belgium;' let us hope that we shall not obtain 'liberty as it is in America.'"

— The Paris correspondent of the *British Medical Journal* writes, under date June 27th, "It is with unfeigned regret I have to announce the death of M. Demarquay, which took place somewhat suddenly on Monday, the 21st instant, at Longueval, his birthplace, a small village in the department of the Somme, in the sixty-first year of his age, from cancer of the stomach. The name of Demarquay is familiar to the medical world, as he not only distinguished himself by his writings, which proved him to be a *savant* in the true sense of the word, but was also one of the ablest and most practical surgeons of the day. M. Demarquay was surgeon to the 'Maison Municipale de Santé,' more familiarly known as the Maison Dubois, where he had made himself very popular. He was far above political influences, which is a rare thing for a man of his position in France, so that he had none but friends in the ranks of all parties. This he showed during the siege of Paris, and subsequently during the Commune, when, as surgeon and one of the founders of the 'Ambulance de la Presse,' he rendered the most unreserved and signal service. M. Demarquay was a member of the Academy of Medicine, and, had he lived, would doubtless have one day taken his seat at the Institute. His professional services were rewarded by the state by promotion to the dignity of Commandant of the Legion of Honor. His funeral took place at Longueval, and among the mourners was observed a man with a pair of wooden legs, his own having been removed by M. Demarquay, as they were shattered by a Prussian shell during the war. Born of poor parents, M. Demarquay died a millionaire. He was never married, and consequently bequeathed a portion of his large fortune to his poorer relations, and the remainder was distributed as follows: £4000 to the Paris School of Medicine for the foundation of an annual prize; £400 was reserved and made over to one of his friends and disciples for the purpose of putting together and publishing his loose manuscripts. A man of literary pursuits, M. Demarquay possessed a very extensive library, which is to be distributed among his friends, who will also inherit the various articles of curiosity with which his apartments in the Rue Taitbout teemed."

LETTER FROM PORTLAND.

Messrs. Editors, — June is more full of matters of interest to the medical profession in this State than any other month of the year. In it occur the graduation of the successful candidates in the Medical School of Maine; the opening of the schools for medical instruction in Portland and Lewiston; and the meeting of the Maine Medical Association, with its essays and discussions on disease and public health, its reports about education and the General Hospital, its efforts in behalf of progress wherever a medical body can effect it, and its delightful social gatherings, at which the busy practitioners can find a perfect relief from the exhausting cares of their work.

Rarely has there been a more satisfactory meeting of the association than that which has just been held. During the three days' session which commenced on the 8th, there were numerous reports of cases and papers on particular methods of treatment, all of which elicited profitable discussion. It is impossible in the limits of this letter to give a fitting abstract of these articles, but a good idea of their scope and bearing may be obtained from a brief mention of their titles and authors. Papers were presented by Dr. Horr, of Lewiston, on embolism; Dr. Harlow, Superintendent of the Maine Insane Hospital, Augusta, on the pathology of insanity; Dr. Hamlin, of Bangor, on lancing the gums during first dentition; Dr. Devoll, of Portland, on dress reform; Dr. Spalding, of Portland, on atropia in ophthalmic surgery; Dr. Adams, of Island Pond, on the use of Esmarch's bandage; and Professor Palmer, of the Medical School of Maine, on antipyretics. Dr. Greene, of Portland, exhibited a case of dislocation of the shoulder, which was reduced after sixty-five days' continuance; Dr. Files, of Portland, reported a case of double amputation after railroad injuries, with recovery, and an amputation of the foot; Dr. Sanger, of Bangor, a case of acute abscess of the lung, treated with the aspirator; and Dr. Small, of Portland, the result of a great number of cases of forceps delivery, strongly favoring the employment of the instruments in tardy cases. Though there was in these articles little, perhaps, which could be regarded as strikingly original in conception, they certainly possessed the merit of being in great measure the result of actual observation on the part of able and practical men, and of bringing before the profession in an attractive way many facts and ideas which could not fail to make a useful and lasting impression. And in this way the association is doing a great good. It presents inducements to its members to report the results of their cases, to compare notes with their fellows, to do more careful and critical work, and to acquire a habit and facility of communicating their beliefs and opinions. Indeed, it is almost entirely through the printed transactions of this association that the physicians of Maine give publicity to their views. There are many cases occurring in this State which ought to be reported; but the men who observe them, though appreciating their interest, with a diffidence which has become almost characteristic, hesitate to send the records of their labor to the metropolitan journals, and modestly prefer to make known their doings only to their professional neighbors and friends in the county and State societies. At these meetings work of a most creditable character is regularly done, and it is a matter of very serious regret that so little of it is heard of by the profession at large. Not infrequently delegates from other State societies express surprise at the number and ability of the reports and discussions; and the principal reason for this is that Maine practitioners, by reporting so rarely in the journals, give the medical world little opportunity to know what manner of men they are.

The president, Dr. Thomas H. Brown, of Paris, pronounced a very interesting inaugural address, which contained suggestions as to the duties of the association, the chief one having reference to the speedy establishment of a State Board of Health. In compliance with this proposition a committee, of which Dr. French, of Portland, is chairman, was appointed to coöperate with the constituted authorities in effecting the early formation of such a board. In spite of the rebuffs which the association has experienced in its endeavors to get State legislation in medical matters hitherto, — as, for instance, with regard to dissection, compulsory vaccination, and medical registration, — the commitee is hopeful of convincing the legislature of the necessity of prompt action in the premises, and of being able to report completely and satisfactorily at the next annual meeting.

Dr. Gilman, of Portland, the chairman of the committee on the Maine General Hospital, reported that the building was formally dedicated last October, and opened for the reception of patients in November. (You have already published an account of the ceremonies.) The affairs of the hospital were stated to be in a satisfactory condition. The last legislature appropriated ten thousand dollars for the completion of the central building; and two free beds for the year have been established, one by Mrs. Dummer, of Hallowell, and the other by the Portland Army and Navy Union. The whole number of patients admitted is sixty-nine, ten of them being medical and fifty-nine surgical cases. Thirty-one surgical operations have been performed, and, as will be seen from the following table, the results have generally been of a very satisfactory nature: —

DISEASE.	OPERATION.	RESULT.
Encephaloid of condyle of femur.	Amputation, middle third of thigh.	Discharged cured as to amputation in 4 2-7 weeks.
Strumous arthritis of knee.	Amputation, middle third of thigh.	Discharged cured in 8 5-7 weeks.
Caries of tarsal bones.	Amputation at ankle joint.	Discharged cured in 7 4-7 weeks.
Caries phalanx index finger.	Amputation.	Discharged cured in 5 days.
Ununited sphincter, result of previous operation.	Edges pared and united by suture.	Discharged cured in 2 3-7 weeks.
Fistulæ in ano, three openings with extensive burrowing.	Fistulæ divided.	Discharged cured in 9 4-7 weeks.
Simple fistula in ano.	Fistula divided.	Discharged nearly healed in 1 5-7 weeks.
Vesico-vaginal fistula.	Two operations.	Discharged not relieved.
Cataract.	Lens extracted.	Violent inflammation nearly destroyed eye; but some useful vision was obtained, and it was increasing at time of discharge, 3 weeks.
Cancerous tumor of umbilicus.	Tumor removed.	Discharged cured as to operation in 2 4-7 weeks.
Scirrhus of breast.	Breast removed.	Discharged cured as to operation in 2 6-7 weeks.
Sarcoma of cervix uteri.	Tumor removed.	Growth returned, and patient died in 10 2-7 weeks.
Cystic tumor of neck.	Tumor removed.	Discharged cured in 2 weeks.
Malignant growth from retina.	Eye extirpated, together with a large portion of contents of the orbit.	Obtained a fair stump, and an artificial eye was fitted.
Destruction of eye, result of injury.	Eye extirpated.	Discharged cured in 1 5-7 weeks.
Caries of rib	Carious portion removed.	Discharged in 1 4-7 weeks, wound healing satisfactorily.
Partial ankylosis of knee.	Patella elevated by subcutaneous drilling, and limb straightened.	Discharged in 1 1-7 weeks, limb in good position and without inflammation.
Fibrous ankylosis of shoulder.	Adhesions broken by forcible motion.	Discharged with a good degree of motion, and improving, in 2 2-7 weeks.
Caries of os calcis.	Whole bone removed.	Still under treatment, with prospect of a useful foot.
Phimosis and chancre.	Circumcision.	Discharged cured in 4 5-7 weeks.
Stricture of urethra, with gleet.	Divulsion.	Still under treatment.
Traumatic stricture of urethra, with almost constant painful erections	Gradual dilatation.	Discharged cured in 2 2-7 weeks.
Traumatic stricture accompanied by cystitis.	Gradual dilatation.	Still under treatment.
Traumatic stricture.	Gradual dilatation attempted.	Extravasation of urine, complete retention, puncture of bladder through rectum, death from pyæmia on the 13th day.
Necrosis of skull.	A large piece of both tables removed.	Discharged cured in 4 5-7 weeks.
Occlusion of pupil.	Iridectomy.	Discharged with very good vision in 1 4-7 weeks.
Laceration of perineum and of cervix uteri.	Two plastic operations.	Still under treatment.
Laceration of cervix uteri.	Plastic operations.	Still under treatment.
Caries of femur.	Removed with gouge.	Discharged in 2 weeks, wound filling well.

The association voted to appropriate two hundred and fifty of the six hundred dollars balance which the treasurer reported, for the support of a free bed in the hospital for one year. It may properly be mentioned in this connection that the Odd Fellows of this city will probably found one and perhaps two free beds, and it is hoped that the Masonic bodies will do likewise.

No question brought before the meeting excited more or livelier discussion than that of medical education. Dr. Adams, of Island Pond, chairman of the committee on the Medical School of Maine, reported that the school was in excellent condition, the teachers being devoted and successful, the students faithful, attentive, and enthusiastic. He suggested the desirableness of a graded course of study as soon as it could safely be attempted. In closing he stated that he had just had placed in his hands the following preamble and vote which had been adopted at the meeting of the faculty the previous night: —

Whereas, The faculty believe that it is desirable for students to pay especial attention to the primary branches during the first portion of their course of study, in order that they may be better prepared to appreciate the more advanced subjects in the latter part; and

Whereas, The faculty, though deeming it inexpedient at present to oblige students to take a regularly graded course of study, desire to present inducements which will lead them to voluntarily pursue this preferable plan; therefore it is

Voted, That any student may present himself for final examination in anatomy, physiology, and chemistry (any or all) at the regularly appointed time for examination, provided he previously presents to the secretary satisfactory evidence that, at the close of the current term, he will have completed at least twelve months of actual study and have attended a full course of lectures in this school; and an official record of the result of the successful examinations shall be made by the secretary. But the successful passage of an examination shall not exempt a student from faithful attendance upon any exercises in any department during the second course of lectures.

Although this is only putting a premium on the adoption of a graded course, making the pursuit of this plan optional and not obligatory, still it is so evidently a step forward and the forerunner of a radical change in the method of instruction, that the association immediately and enthusiastically adopted a resolution of approval and indorsement.

The matter of preliminary education for medical students was then taken up and freely ventilated. Several members thought that an entrance examination should be held, one even proposing that a college education should be the minimum standard. In the course of the discussion the fact was stated that the faculty had recently voted to require every new candidate for admission to the Medical School of Maine to give satisfactory evidence of possessing a decent English education, by presentation of a diploma, if possible, otherwise by written examination. This is as far as the government of the school can venture at present. It has of late so tightened the screws at the examination for degrees that the average of rejections for two years past has been twenty-two per cent. Of the unsuccessful aspirants for medical honors a majority go to another school and graduate without difficulty within a half-year. If in these circumstances a high degree of preparatory education is insisted upon, the number of students in the school will be disastrously reduced. The faculty is anxious to go just as far and as fast as the profession will sustain it, but it would be suicidal to do more. As long as physicians will allow men who are notably lacking in mental ability, training, and acquirements to be their students even nominally, and will resent as a personal affront the school's refusal to foster these weaklings, and regard it as sufficient reason for a withdrawal of patronage, so long the faculty must be crippled in its efforts to advance the standard of education. At the conclusion of the discussion the following resolution was unanimously adopted: —

Resolved, That, in the opinion of this association, it is the duty of physicians to impress on young men intending to study medicine the necessity of a thorough preliminary education, and to decline to receive under their instruction such as are deficient in education or mental endowments.

On the evening of the second day the annual oration was given by Dr. Alfred Mitchell, of Brunswick, who chose for his subject The Gentleman in Medicine. Such an abstract as could be given here would come far short of doing justice to this production; but all who know our popular professor of obstetrics and diseases of children will readily believe that it was rich in profound thought, elegant in diction, sparkling with wit, and received with hearty applause. After the oration, the physicians of Portland, in accordance with their custom for many years, gave a supper at the Falmouth Hotel to the visiting members and their wives, and the occasion was very enjoyable.

During the session many new members were admitted. There was one woman among them, the first of her sex who has joined the association. She is a graduate of several years' standing, an active member of the Cumberland County Medical Society, and not the slightest opposition was made to her election.

Last year Dr. T. A. Foster, of Portland, offered a prize of twenty-five dollars — the amount of his salary as treasurer — for the best essay on one of several specified subjects. A single paper was presented, the subject of which was The Hygiene of our Country Towns and Villages, and its author, Dr. E. M. Fuller, of Bath, received the award. Dr. Foster offers a similar prize for next year for an essay on nervous indigestion and its relations to sympathetic affections from other forms of indigestion, or on the physiology of habit. Any member may compete; the essays are to be sent to the president, and the members who are professors in the medical school will act as judges.

Dr. James M. Bates, of Yarmouth, is president, and Dr. Charles O. Hunt, of Portland, secretary for the ensuing year.

The Portland School for Medical Instruction opened its summer term on the 16th with a good list of students. The Lewiston school began work at about the same time, and both start off on their year's labor with excellent prospects and the determination to accomplish more than ever before, much as this has been. GAMMA.

PORTLAND, *June*, 1875.

WEEKLY BULLETIN OF PREVALENT DISEASES.

THE following is a bulletin of the diseases prevalent in Massachusetts during the week ending July 24, 1875, compiled under the authority of the State Board of Health from the returns of physicians representing all sections of the State: —

There has been during the week a marked diminution in the prevalence of all acute diseases except dysentery; the principal increase in the prevalence of that affection occurred in the Metropolitan section. The diseases of summer (cholera infantum, cholera morbus, diarrhœa, and dysentery) continue at the head of the list, but they are generally mild in type.

The report for each section is as follows: —

Berkshire: Cholera infantum, typhoid fever, diarrhœa, cholera morbus.

Valley: Diarrhœa, cholera morbus, cholera infantum, dysentery. Easthampton reports two cases of small-pox.

Midland: Diarrhœa, cholera infantum, cholera morbus, rheumatism, dysentery.

Northeastern: Cholera morbus, diarrhœa, cholera infantum. Very little sickness.

Metropolitan: Diarrhœa, cholera morbus, cholera infantum, dysentery. A few cases of diphtheria are reported. Measles and scarlatina have almost disappeared.

Southeastern: Cholera morbus, diarrhœa, rheumatism. Very little sickness.

F. W. Draper, M. D., Registrar.

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COMPARATIVE MORTALITY-RATES FOR THE WEEK ENDING JULY 17, 1875.

	Estimated Population.	Total Mortality for the Week.	Annual Death-rate per 1000 during Week.
New York	1,040,000	890	44
Philadelphia	775,000	459	31
Brooklyn	450,000		
Boston	350,000	184	27
Cincinnati	260,000	116	23
Providence	100,700	29	15
Worcester	50,000	19	20
Lowell	50,000	15	16
Cambridge	50,000	15	16
Fall River	45,000	22	25
Lawrence	33,000	27	43
Springfield	33,000	4	6
Lynn	28,000	9	17
Salem	26,000	6	12

Notice. — The editor of the Harvard Triennial Catalogue would like to learn the date and place of death of the following persons, who took their medical degrees at Cambridge before 1800: Dr. James Otis Prentiss, Dr. John B. Menard, and Dr. Jonathan White. He may be addressed at the College Library, Cambridge, Mass.

Books and Pamphlets Received. — Iridotomy and its Applicability to certain Defects of the Eye. By A. W. Calhoun, M. D. Atlanta, Ga. 1875.

The Management of Eczema. By L. Duncan Bulkley, A. M., M. D. New York: G. P. Putnam's Sons. 1875. (Lee and Shepard.)

A Clinical Contribution to the Treatment of Tubal Pregnancy. By T. Gaillard Thomas, M. D. Reprinted from the New York Medical Journal. New York: D. Appleton & Co. 1875.

The Skull and Brain: their Indications of Character and Anatomical Relations. By Nicholas Morgan. London: Longmans, Green, & Co. 1875.